

Even in a high pressure discharge lamp causing temperature difference between electrodes when an AC current is supplied, the temperature difference is eliminated to suppress the arc movement, thereby suppressing flickering caused thereby during stable lighting.

The lamp current is formed into a current waveform including a standard period current supplied at a predetermined standard period and a short period current of a period shorter than the same and, on every one-half period of the standard period current, formed into a current waveform by supplying the short period current inverting the polarity from the identical polarity to the opposite polarity in the next one-half period for 1 period, in which the duty ratio before and after the polarity inversion of the short period current and the duty ratio before and after the polarity inversion side can be decided automatically by the duty ratio.